**TRANSMITTAL OF APPEAL BRIEF**Docket No.
KPO-138

In re Application of: Hiroichi Inada et al.

Application No.
09/550,592-Conf. #1046Filing Date
April 17, 2000Examiner
A. C. WongGroup Art Unit
2613

Invention: Processing System

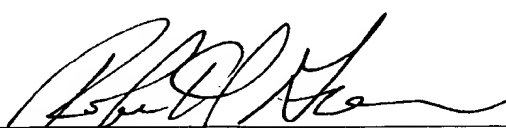
TO THE COMMISSIONER OF PATENTS:Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed: April 7, 2004.

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Docket No.: KPO-138
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Hiroichi Inada et al.

Application No.: 09/550,592

Confirmation No.: 1046

Filed: April 17, 2000

Art Unit: 2613

For: Processing System

Examiner: A. C. Wong

APPELLANT'S BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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APR 12 2004

Technology Center 2600

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on
April 12, 2004.

The fees required under § 1.17(f) and any required petition for extension of time for
filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF
APPEAL BRIEF.

This brief is transmitted in triplicate.

This brief contains items under the following headings as required by 37 C.F.R.
§ 1.192 and M.P.E.P. § 1206:

- I. Real Party In Interest
- II. Related Appeals and Interferences
- III. Status of Claims
- IV. Status of Amendments
- V. Summary of Invention
- VI. Issues
- VII. Grouping of Claims
- VIII. Arguments

IX. Claims Involved in the Appeal
Appendix A Claims

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

Tokyo Electron Limited of Tokyo, Japan is the real party in interest of the present application. An assignment of all rights in the present application to Tokyo Electron Limited was executed by the inventors and recorded by the U.S. Patent and Trademark Office at **reel 010751, frame 0690**.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 19 claims pending in application.

B. Current Status of Claims

1. Claims canceled: 3-6, 10, 11, 13 and 14
2. Claims withdrawn from consideration but not canceled: none
3. Claims pending: 1, 2, 7-9, 12 and 15-27
4. Claims allowed: none
5. Claims rejected: 1, 2, 7-9, 12 and 15-27

C. Claims On Appeal

The claims on appeal are claims 1, 2, 7-9, 12 and 15-27

Accordingly, the Appellant hereby appeals the rejection of claims 1, 2, 7-9, 12 and 15-27, which are presented in the Appendix.

IV. STATUS OF AMENDMENTS

Appellant has not filed an Amendment After Final Rejection dated January 12, 2004 (Paper No. 7). Appellant is appealing the final rejection of the pending claims.

The claims in Appendix A do incorporate the amendments indicated in the paper filed by Applicant on October 22, 2003.

V. SUMMARY OF INVENTION

Claim 1 recites a substrate processing system comprising: first and second processing units adapted to process a substrate W by a first treatment and a second treatment, respectively; first image pickup means 61 adapted to pick-up an image of a member of the processing units or the substrate being placed in the processing units; a transfer apparatus 56 adapted to convey the substrate between the processing units and including a substrate carrying arm 59 adapted to hold the substrate when the transfer apparatus conveys the substrate; wherein the first image pickup means is mounted to the transfer apparatus 56 such that the first image pickup means 61 moves together with the substrate carrying arm at least when the substrate carrying arm is moving in a first direction.

In the claimed invention, the first image pickup means (for example, CCD camera 61) is mounted to the transfer apparatus (for example, first image pickup means is attached to the wafer carrying arm 59, 183) such that the first image pickup means moves together with the substrate carrying arm at least when the substrate carrying arm is moving in a first direction (for example, vertical direction). See also the specification at page 23, line 23 to page 24, lines 6.

VI. ISSUES

The issues presented for consideration in this Appeal are as follows:

- (1) Whether the Examiner erred in rejecting claims 1-2, 7-9, 12, 15-24 and 26-27 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No.

- 5,620,560 to Akimoto et al. in view of U.S. Patent No. 5,815,594 to Tanaka?
- (2) Whether the Examiner erred in rejecting claim 25 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,620,560 to Akimoto et al. in view of U.S. Patent No. 5,815,594 to Tanaka and further in view of U.S. Patent 6,126,744 to Hawkins et al.?

Each of these issues will be discussed in turn.

VII. GROUPING OF CLAIMS

For purposes of this appeal brief only, and without conceding the teachings of any prior art reference, the claims have been grouped as indicated below:

Group Claim(s)

- I. 1-2, 7-9, 12, 15-24 and 26-27
- II. 25

In Section VIII below, Applicant has included arguments supporting the separate patentability of each claim group as required by M.P.E.P. § 1206.

VIII. ARGUMENTS

In the Office Action of July 17, 2003 (Paper No. 20), the following rejections were presented by the Examiner:

- (i) 35 U.S.C. §103
- (1) The Examiner rejected claims 1-2, 7-9, 12, 15-24 and 26-27 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,620,560 to Akimoto et al. in view of U.S. Patent No. 5,815,594 to Tanaka;
 - (2) The Examiner rejected claim claim 25 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,620,560 to Akimoto et al. in view of U.S. Patent No. 5,815,594 to Tanaka and further in view of U.S. Patent 6,126,744 to Hawkins et al.

(ii) Other

None

For at least the following reasons, Appellant submits that these objections and rejections are both technically and legally unsound and should therefore be reversed.

(i)(1) 35 U.S.C. §103

The Examiner rejected claims 1-2, 7-9, 12, 15-24 and 26-27 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,620,560 to Akimoto et al. in view of U.S. Patent No. 5,815,594 to Tanaka. Appellant respectfully traverses this rejection.

Claim 1 recites a substrate processing system comprising: first and second processing units adapted to process a substrate by a first treatment and a second treatment, respectively; first image pickup means adapted to pick-up an image of a member of the processing units or the substrate being placed in the processing units; a transfer apparatus adapted to convey the substrate between the processing units and including a substrate carrying arm adapted to hold the substrate when the transfer apparatus conveys the substrate; wherein the first image pickup means is mounted to the transfer apparatus such that the first image pickup means moves together with the substrate carrying arm at least when the substrate carrying arm is moving in a first direction.

In the claimed invention, the first image pickup means (for example, CCD camera 61) is mounted to the transfer apparatus (for example, first image pickup means is attached to the wafer carrying arm 59, 183) such that the first image pickup means moves together with the substrate carrying arm at least when the substrate carrying arm is moving in a first direction (for example, vertical direction). See also the specification at page 23, line 23 to page 24, lines 6.

Akimoto et al. '560 discloses a method and apparatus for heat-treating a substrate. As acknowledged by the Office Action, Akimoto et al. '560 does not disclose, teach or suggest a first pickup means, wherein the first image pickup means is mounted to the transfer apparatus

such that the first image pickup means moves together with the substrate carrying arm at least when the substrate carrying arm is moving in a first direction.

In Tanaka '594, a reduction projection exposure apparatus (stepper) S which is a part of a semiconductor exposure apparatus. A first CCD camera 75 serves as image pickup means. However, the pickup means never moves. The focusing and aligning procedures are carried out by moving the XY-stage 6. Tanaka '594 operates as it was intended to operate, with wafers being moved in and out of position, while the CCD camera 75 remains in a single location.

Even if Akimoto et al. '560 and Tanaka '594 were combined, at best the CC camera would be associated with the XY-stage 6. In contrast, the Office Action would have the CCD camera 75 placed on a carrying arm of Akimoto et al. '560. The Office Action alleges that this placement would be obvious "so as to obtain a clearer view of the wafer or substrate processing tasks at hand during semiconductor operations." See Office Action at page 3, lines 15-17.

But there is nothing wrong with the static placement of the CCD camera 75 in Tanaka '594. In fact, the static placement of the CCD camera 75 in Tanaka '594 clearly operates as it was intended to, and the examiner has not given any motivation for changing the location of the CCD camera 75 or for making the camera mobile or movable. Still further, the only motivation offer by the examiner is "to obtain a clearer view of the wafer or substrate processing tasks at hand." At best, this is an argument for placing additional static CCD cameras 75 at other processing task locations. Applying the static CCD camera 75 of Tanaka '594 to the primary reference Akimoto et al. '560 would result in a static CCD camera in Akimoto et al. '560. There is not suggestion, when taking the references as a whole, to have a movable CCD camera in Akimoto et al. '560. Accordingly, the proper result of combining the references would be a static CCD camera, not the claimed "first image pickup means is mounted to the transfer apparatus such that the first image pickup means moves together with the substrate carrying arm at least when the substrate carrying arm is moving in a first direction." Accordingly, the Office Action has not established a prima facie case of obviousness, and the rejection should not be sustained.

Still further, this is clearly a situation of the examiner using improper hindsight.

It is established law that one "cannot use hindsight reconstruction to pick and chose among isolated disclosures in the prior art to deprecate the claimed invention." Ecolchem, Inc. v. Southern California Edison Company, 56 USPQ2d 1065, 1072 (Fed. Cir. 2000) (citing In re Fine, 837 F.2d 1071, 1075, 5, USPQ2d 1780, 1783 (Fed. Cir. 1988)). As this rejection is

assembling the static CCD camera of Tanaka '594 with the movable transfer apparatus of Akimoto et al. '560, the examiner has defined "the problem in terms of its solution reveals improper hindsight in the selection of the prior art relevant to obviousness." Ecolochem at 1073 (citing Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH, 139 F.3d 877, 880, 45 USPQ2d 1977, 1981 (Fed. Cir. 1998)).

For all of the reasons above, the Office Action has not established a prima facie case of obviousness, and the rejection should not be sustained.

Still further, the Office Action states that "according to court law, it would have been obvious ... to adjust or shift the location of the image pickup means to any location that would be convenient to provide the user a clearer view of the situation at hand." See Office Action at page 3, lines 17-20. Reference to "court law" is an incomplete and incomprehensible statement of reasons of rejection. Appellant has now way of knowing with particularity what the examiner is referring to, as there is no citation to rebut. The examiner appears to be trivializing the nature of the invention without providing a motivation to combine. Accordingly, a prima facie case of obviousness has not been presented, and this rejection cannot be sustained.

Even if "court law" is interpreted as referring to such cases whereby there is a rearrangement of parts, Appellant asserts that In re Japikse applies, whereby "The mere fact that that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device." Ex parte Chicago Rawhide Mfg. Co., 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984). See In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). See MPEP §2144.04 (C).

Still further, claims 2, 7-9, 12, 15-24 and 26-27, being dependent upon claim 1, are also allowable for the reasons above. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, the §103 rejection should not be sustained.

(i)(2) 35 U.S.C. §103

The Examiner rejected claim 25 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,620,560 to Akimoto et al. in view of U.S. Patent No. 5,815,594 to

Tanaka, and further in view of U.S. Patent No. 6,126,744 to Hawkins et al. Appellant respectfully traverses this rejection.

Claim 25, depending from claim 1, is also allowable for the reasons above. Moreover, this claim is further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, this rejection cannot be sustained.

(ii) Other

None

IX. CLAIMS INVOLVED IN THE APPEAL


A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A do include the amendments filed by Applicant on October 22, 2003.

Conclusion

In view of the foregoing reasons, Appellant submits that all of the rejections of claims 1, 2, 7-9, 12 and 15-27 are improper and should not be sustained. Therefore, a reversal of the Rejections of July 17, 2003 (Paper No. 20), as to claims 1, 2, 7-9, 12 and 15-27, is respectfully requested. Accordingly, the application and all claims 1, 2, 7-9, 12 and 15-27 are in condition for allowance, and notice to that effect is solicited.

Dated: April 7, 2004

Respectfully submitted,

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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/550,592

1. (Previously presented) A substrate processing system comprising:
first and second processing units adapted to process a substrate by a first treatment and a second treatment, respectively;
first image pickup means adapted to pick-up an image of a member of the processing units or the substrate being placed in the processing units;
a transfer apparatus adapted to convey the substrate between the processing units and including a substrate carrying arm adapted to hold the substrate when the transfer apparatus conveys the substrate;
wherein the first image pickup means is mounted to the transfer apparatus such that the first image pickup means moves together with the substrate carrying arm at least when the substrate carrying arm is moving in a first direction.
2. (Previously presented) The processing system as set forth in claim 1 further comprising second image pickup means, arranged in at least one of the processing units, for picking-up an image of said one of the processing units or the substrate being placed in said one of the processing units which the first image pickup means is incapable of picking-up.
- 3-6. (Cancelled)
7. (Original) The processing system as set forth in claim 1, wherein said first image pickup means comprises a plurality of kinds of image pickup apparatus.
8. (Previously presented) The processing system as set forth in claim 1, wherein the system is configured so that the system can selectively be operated in an automatic mode in which the first image pickup means picks-up an image of a predetermined member of at least one the processing units or the substrate located in said one of the processing units according to predetermined procedures, or in a manual mode in which the first image pickup means picks-up

an image of a desired member located in at least one of the processing units or the substrate located in said one of the processing units according to manual operation procedures.

9. (Previously presented) The processing system as set forth in claim 1, wherein the first processing unit is a liquid process unit configured to perform a liquid process by which the substrate is processed with a processing solution, and the second processing unit is a thermal process unit configured to perform a thermal process for the substrate,

said system further comprising:

means for judging whether process conditions of the liquid process performed by the liquid process unit is appropriate, and for judging whether the substrate is appropriately held in place by a substrate holder provided in the thermal process unit, based on an image picked-up by the first image pickup means.

10. (Cancelled)

11. (Cancelled)

12. (Previously presented) The substrate processing system as set forth in claim 1, wherein the first processing unit includes:

a spin chuck adapted to rotate while holding the substrate and having a rotation shaft; and

a nozzle adapted to supply a processing solution onto a center of a surface of the substrate held by the spin chuck;

said system further comprising:

means for judging whether the nozzle supplies the processing solution onto the center of the substrate held by the spin chuck based on an image picked-up by the first image pickup means.

13. (Cancelled)

14. (Cancelled)

15. (Previously presented) The substrate processing system as set forth in claim 1, wherein the first processing unit includes:

- a spin chuck adapted to rotate while holding the substrate ; and
- a nozzle adapted to supply a processing solution onto a center of a surface of the substrate held by the spin chuck;

said system further comprising:

- means for judging whether a drip of the processing solution appears at a tip of the nozzle based on a image picked-up by the first image pickup means.

16. (Previously presented) The substrate processing system as set forth in claim 1, wherein the first processing unit includes:

- a spin chuck adapted to rotate while holding the substrate ; and
- a nozzle adapted to supply a processing solution onto a center of a surface of the substrate held by the spin chuck; and

wherein the first image pickup means includes a laser displacement measurement apparatus adapted to recognize an image of an periphery of the processing solution spreading outwardly on a surface of the substrate by a centrifugal forth when the substrate is being rotated by the spin chuck.

17. (Previously presented) The substrate processing system as set forth in claim 1, wherein the second processing unit has a processing plate adapted to heat or cool the substrate,

said system further comprising:

- means for judging whether the substrate is appropriately placed on the processing plate based on an image picked-up by the first image pickup means.

18. (Previously presented) The system according to claim 1, wherein the first image pickup means is integrally attached to the substrate carrying arm so as to move together with the substrate carrying arm in any direction.

19. (Previously presented) The system according to claim 1, wherein the transfer apparatus further includes:

a base to which the substrate carrying arm is mounted;
a support member mounted to the base and supporting the first image pickup means;
a vertical moving mechanism adapted to move the base in a vertical direction;
a first horizontal moving mechanism adapted to move the substrate carrying arm in a horizontal direction relative to the base to allow the substrate carrying arm to access the processing units; and

a second horizontal moving mechanism adapted to move the support member in a horizontal direction relative to the base to allow the first image pickup means to access the processing units.

20. (Previously presented) The processing system as set forth in claim 1, wherein said image pickup means comprises a CCD camera.

21. (Previously presented) The processing system as set forth in claim 20, wherein the CCD camera is mounted to the transfer apparatus via a turn drive mechanism adapted to turn the CCD camera about a vertical axis.

22. (Previously presented) The processing system as set forth in claim 20, wherein the CCD camera is mounted to the transfer apparatus via a tilting mechanism adapted to tilt the CCD camera downwards.

23. (Previously presented) The processing system as set forth in claim 21, wherein the CCD camera and the turn drive mechanism are mounted to the transfer apparatus via a horizontal moving mechanism adapted to move the CCD camera horizontally to allow the CCD camera to access the processing units.

24. (Previously presented) The processing system as set forth in claim 9, wherein the judging means is configured to judge the process conditions based on a image of a surface of the substrate picked-up by the first image pickup means.

25. (Previously presented) The processing system as set forth in claim 24, wherein the judging means is configured to judge the process conditions based on a color tone or a color shading in the surface of the substrate.

26. (Previously presented) The processing system as set forth in claim 12, wherein:
a line extending parallel to a rotational axis of the spin chuck is drawn on a circumferential surface of the rotation shaft; and

the judging means is configured to judge whether the nozzle is located in a position where the nozzle supplies the processing solution onto the center of the surface of the substrate based on a positional relationship between the line and the nozzle which is determined based on an image picked up by the first image pickup means.

27. (Previously presented) The processing system as set forth in claim 12, wherein the judging means has a function of determining whether the first image pickup means is in focus on a target, and the judging means is configured to judge whether the nozzle is in a position where the nozzle supplies the processing solution onto the center of the substrate, based on a focusing condition of an image of the processing solution picked-up by the first image pickup means.